

2019

AP Environmental Science

Free-Response Questions

Larsh - Assessment #1 “The Great Pacific Garbage Patch”

2019 AP ENVIRONMENTAL SCIENCE FREE-RESPONSE QUESTIONS

ENVIRONMENTAL SCIENCE

SECTION II

Time -20 minutes

1 Question

Directions: Answer the question, which is weighted by accuracy of response within the allotted 20 minutes. Write your answers on the pages following the questions in this book. Where calculations are required, clearly show how you arrived at your answer. Where explanation or discussion is required, support your answers with relevant information and/or specific examples.

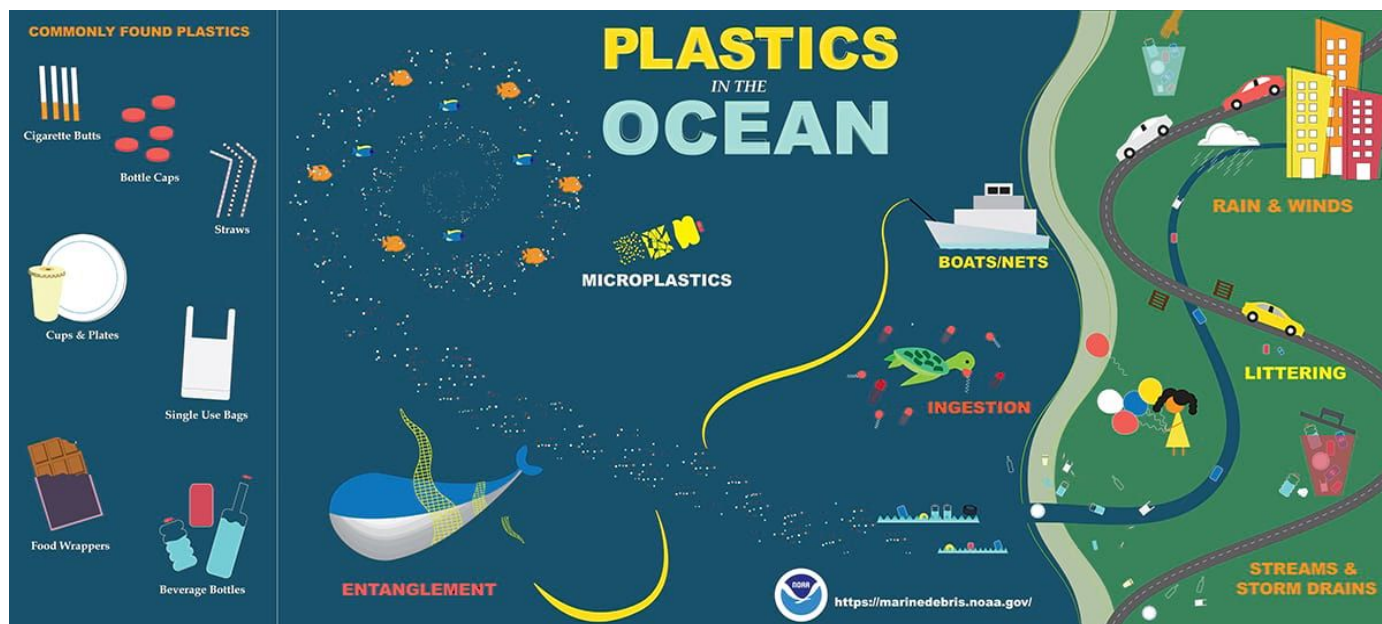
1. The Great Pacific Garbage Patch is a collection of marine debris in the North Pacific Ocean. The Great Pacific Garbage Patch is bounded by the North Pacific Subtropical Gyre -a system of circular ocean currents formed by the Earth's wind patterns and the forces created by the rotation of the planet.

Most of the debris is non biodegradable. Some denser debris sinks up to several meters beneath the surface, while the densest debris sinks all the way to the bottom of the ocean. Plastics make up the majority of marine debris including plastic bags, bottle caps, plastic water bottles, and styrofoam cups.

Marine debris can be very harmful to marine life in the gyre by disturbing marine food webs. Plastics and trash on the surface block sunlight from reaching plankton and algae below, which provide food for sequential trophic levels in the food chain. The dangers are compounded by the fact that plastics both leach out and absorb harmful pollutants.

Cleaning up marine debris is not easy as the size of the oceans make the job incredibly time-consuming to consider. Additionally, because the Great Pacific Garbage Patch is so far from any country's coastline, no nation will take responsibility or provide the funding to clean it up.

2019 AP ENVIRONMENTAL SCIENCE FREE-RESPONSE QUESTIONS



- (a) Use the information and diagram provided to answer the following questions.
- Identify** the location of excessive marine debris in the Pacific Ocean
 - Describe** the most common types of debris found in oceans
 - Describe** where the debris comes from and how it reaches the North Pacific Subtropical Gyre.
- (b) Marine species are affected by human activity and product consumption.
- Special ordinances and restrictions can help marine organisms affected by marine debris. **Describe** one ordinance or restriction that could reasonably be implemented to help prevent the pollution of oceans by human actions.
 - Identify** the source that intensifies plastic pollution and **describe** one impact on species not represented in the provided excerpt or diagram above.
 - Describe** TWO methods that researchers are using to either identify, remove, or solve the marine debris crisis in the Pacific Ocean.

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